



**BUREAU OF RESEARCH**



New Jersey Department of Transportation

16th ANNUAL NJDOT

# RESEARCH SHOWCASE

OCTOBER 23, 2014

The Conference Center at Mercer  
1200 Old Trenton Road  
West Windsor, NJ 08550

# 16TH ANNUAL NJDOT RESEARCH SHOWCASE

## AGENDA

The **16th Annual NJDOT Research Showcase** is an opportunity for constituents of the New Jersey Department of Transportation (NJDOT) to experience the broad scope of ongoing research initiatives, technology transfer activities, and academic research being conducted by research partners and their associates. This program is hosted by the New Jersey Local Technical Assistance Program (NJ LTAP) and meets requirements for up to 3 PDHs for continuing professional competency for licensed professional engineers. \*

- 8:00 a.m. Academic Exhibits**  
*Room 116 and Room 117*
- 9:00 a.m. Opening Remarks**  
*Auditorium*  
**Robert Clark**  
Division Administrator, Federal Highway Administration – New Jersey Division  
**Joseph Bertoni**  
Deputy Commissioner, New Jersey Department of Transportation
- 9:20 a.m. Strategic Highway Research Program 2 Update**  
*Auditorium*  
**Neil Pedersen**  
TRB/SHRP 2 Deputy Director, Implementation & Communication
- 9:45 a.m. Keynote Address: USDOT Connected Vehicle and Automated Vehicle Program**  
*Auditorium*  
**Kenneth M. Leonard**  
Director, USDOT Intelligent Transportation Systems Joint Program Office
- 10:10 a.m. Connected Vehicle Pilots Program**  
*Auditorium*  
**Kate Hartman**  
Connected Vehicle Pilots Program Lead, USDOT Intelligent Transportation Systems Joint Program Office
- 10:45 a.m. Academic Exhibits and Break**  
*Room 116 and Room 117*
- 11:10 a.m. Smart Work Zones- EDC 3**  
*Auditorium*  
**Todd Peterson, Transportation Specialist**  
Work Zone Management, Federal Highway Administration
- 11:45 a.m. Presentation of 2014 New Jersey Department of Transportation Outstanding Student in Transportation Award, Best Student Innovation Research Problem Statement, and NJDOT Research Implementation Award**  
  
Presented by: Paul Thomas, Project Engineer, New Jersey Department of Transportation Bureau of Research
- 12:00 a.m. Buffet Lunch**

\* To confirm the acceptance of these PDHs for continuing professional competency for licensed professional engineers, please consult the licensure board of that state.

# Breakout Sessions

## 1:00 p.m. Concurrent Breakout Sessions

### ENVIRONMENT

Room 216

Moderator: Priscilla Ukpah, NJDOT

1:00–1:35 p.m.

#### ***Estimating Truck Fleet Size and Salt Usage for Winter Road Maintenance***

Steven Chien,  
New Jersey Institute of Technology  
i.jy.chien@njit.edu

1:40–2:15 p.m.

#### ***Evaluation of Surface Resistivity Indication of Ability of Concrete to Resist Chloride Ion Penetration***

Hani Nassif, Rutgers University  
nassif@rci.rutgers.edu

2:20–3:00 p.m.

#### ***Developing a Smartphone App to Promote Low Carbon Emission and Physically Active Transportation Modes: Lessons Learned from Queens, NY***

Yan Zheng & Stanley Zhang, CUNY (UTRC)  
yan.zheng@qc.cuny.edu

### INFRASTRUCTURE

Auditorium

Moderator: Giri Venkateela, NJDOT

1:00–1:35 p.m.

#### ***Evaluation of the Ability of Non-Nuclear Devices to Replace the Nuclear Density Gauge in Quality Control of Compacted Unbound Pavements***

Ayman Ali, Rowan University  
mehta@rowan.edu

1:40–2:15 p.m.

#### ***Development of Performance Related Pay Adjustment for Asphalt Pavement Quality Assurance***

Hao Wang, Rutgers University  
hwang.cee@rutgers.edu

2:20–3:00 p.m.

#### ***Evaluation of Bridge Functional Obsolescence Using Congestion Performance Measures Determined from Anonymous Vehicle Probe Data***

Andrew Bechtel, The College of New Jersey  
bechtela@tcnj.edu

### MOBILITY

Room 213

Moderator: Allison Inzerro, NJ LTAP

1:00–1:35 p.m.

#### ***Impact Analysis of Recreational Transit Services on Local Community Economic Development, Employment, and Spending***

Deva Deka, Rutgers University  
ddeka@ejb.rutgers.edu

1:40–2:15 p.m.

#### ***Short-term Freeway Work Zone Capacity Estimation Using Support Vector Machine Incorporated with Probe-Vehicle Data***

Bo Du, New Jersey Institute of Technology  
bd54@njit.edu

2:20–3:00 p.m.

#### ***Transit and Intersection Locator Applications***

William Ragozine, Cross County Connection  
ragozine@driveless.com

### SAFETY

Room 214 and 215

Moderator: Daniel Lisanti and Mac Rashid, NJDOT

1:00–1:35 p.m.

#### ***Examining the Applicability of Small Quadcopter Drone for Traffic Surveillance and Roadway Incident Monitoring and Evaluations for Video Analytics Systems for Effective Traffic Management***

Zijia Zhong and Slobodan Gutesa, New Jersey Institute of Technology  
zz46@njit.edu, sg424@njit.edu

1:40–2:15 p.m.

#### ***Delaware I-495 Bridge Closure Cause to Rethink Roads***

Barry Benton, Delaware Department of Transportation  
barry.benton@state.de.us

2:20–3:00 p.m.

#### ***Advances in Safety Program Practices in “Zero-Fatalities” States (NCHRP 20-68A)***

Whitney Faron, Cambridge Systematics  
wfaron@camsys.com

## 3:00 p.m. ADJOURNMENT

## About Our Presenters

**Joseph Bertoni, P.E.** has more than 25 years of experience in transportation engineering, planning and administration with New Jersey Department of Transportation (NJDOT). Joe began his career with the NJDOT in 1988 in the Division of Bridge Design and has worked as a Project Manager in the Department's Capital Program Management unit where he was responsible for managing the design and construction of major bridge and highway projects. Prior to becoming Deputy Commissioner, Joe served as the NJDOT's Chief of Staff. Joe received a Bachelor of Science degree in Civil Engineering from Widener University and is a licensed Professional Engineer in the State of New Jersey and the Commonwealth of Pennsylvania.

**Robert Clark, MPA** is the Division Administrator for the Federal Highway Administration (FHWA) New Jersey Division. Prior to becoming the Division Administrator in New Jersey in September 2013, Robert was the Financial Manager of the South Carolina Division and the first Team Manager for the Finance Services Technical Service team in the Resource Center. Before joining the FHWA in 2001, he worked for the North Carolina Department of Transportation as a Federal-aid Administrator. Robert is a Certified Government Financial Manager and a former Certified Public Accountant.

**Katherine Hartman, PMP** has worked for over 15 years at the U.S. Department of Transportation (USDOT) in the Federal Highway Administration (FHWA) Freight office and the Federal Motor Carrier Safety Administration (FMCSA) research and technology offices. She now serves as the Acting Team Lead for Program Management and the Program Manager for the Truck Program, the Dynamic Mobility Applications Program and the Connected Vehicle Pilots Program in the Intelligent Transportation Systems (ITS) Joint Program Office. She has a diverse background, including work as a marketing manager, financial researcher, a paralegal and serving in the Peace Corps as a business advisor. Katherine has both a BA in Economics and an MBA as well as being a certified PMP.

**Kenneth M. Leonard** was named the Director of the U.S. Department of Transportation (USDOT) Intelligent Transportation Systems Joint Program Office (ITS JPO) in December 2012. He is a member of Federal government's Senior Executive Service. Mr. Leonard has over 30 years of federal government and private sector leadership experience providing solutions in transportation, energy, investment decision making, defense, environment, regulatory affairs, and information systems. He joined the ITS JPO from the Federal Motor Carrier Safety Administration (FMCSA), where he served as a Senior Policy Advisor and Director of the Office of

Analysis, Research and Technology. Previously, Ken served as Federal Aviation Administration (FAA) Director of Aviation Weather, led the FAA's Technology Development Office and was manager of Investment Analysis. While at the FAA, he provided strategic direction, advancing cornerstone aviation weather enterprise systems and emerging technologies in support of the USDOT's Next Generation Air Transportation Systems initiatives. While serving in the private sector, he provided management oversight of complex and innovative research and development programs involving multibillion-dollar projects. Ken is a graduate of the George Washington University School of Public and International Affairs, where he earned a bachelor's degree in international economics and completed graduate-level studies in economics and finance.

**Neil Pedersen** Since 2012 Neil has served as Deputy Director for Implementation and Communication for the Transportation Research Board's Second Strategic Highway Research program, SHRP 2. In that role he is leading TRB's efforts to ensure that the products of the \$232 million SHRP 2 research program will be used by state DOTs, MPOs, local governments, resource agencies and other implementation agencies. Neil spent most of his career at the Maryland State Highway Administration, where he served the last 8 1/2 years as Administrator and Governor's Highway Safety Representative. Prior to that, he was both Deputy Administrator and Director of the Office of Planning and Preliminary Engineering. Over his career, Neil has been involved in leadership roles in both TRB and AASHTO. He chaired a number of TRB committees over the last 20 years, including serving as Chair of TRB's Executive Committee from 2011 to 2012. He was also Chair of the SHRP 2 Technical Coordination Committee for its Capacity focus area from 2005 until joining TRB staff in 2012.

**Todd Peterson, P.E.** is a Transportation Specialist on the Federal Highway Administration (FHWA) Office of Operations Work Zone Management Team, where he is leading development of work zone Best Practices, technology transfer and outreach, and implementation of Technology Applications for Smarter Work Zones under FHWA's Every Day Counts program. Prior to FHWA, Todd has over 20 years of experience in highway design, transportation planning, traffic engineering, and safety studies. Todd is a licensed PE and certified PTOE, and received his Master's Degree in Civil Engineering from Virginia Tech.

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## PARTNERS

Cambridge Systematics  
Lehigh University  
New Jersey Institute of Technology  
Princeton University  
Richard Stockton College  
Rowan University  
Rutgers, The State University of New Jersey\*  
Stevens Institute of Technology  
The College of New Jersey

### **Members of the CAIT National UTC Consortium**

Rutgers, The State University of New Jersey  
Columbia University  
New Jersey Institute of Technology  
Princeton University  
University of Delaware  
University of South Florida  
University of Texas at El Paso  
Utah State University  
Virginia Polytechnic Institute and State University

### **Members of the UTRC Regional UTC Consortium**

City University of New York\*  
Clarkson University  
Columbia University  
Cornell University  
Hofstra University  
New Jersey Institute of Technology  
New York Institute of Technology  
New York University  
Polytechnic Institute of NYU  
Rensselaer Polytechnic Institute  
Rochester Institute of Technology  
Rowan University  
Rutgers, The State University of New Jersey\*  
The State University of New York  
Stevens Institute of Technology  
Syracuse University  
The College of New Jersey  
University of Puerto Rico–Mayagüez

*\* Official USDOT University Transportation Centers*

## NOTES

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## **NEW JERSEY LOCAL TECHNICAL ASSISTANCE PROGRAM (NJ LTAP)**

Rutgers, The State University of New Jersey  
100 Brett Road  
Piscataway, NJ 08854-8058  
848-445-3112

>> [cait.rutgers.edu/njltap](http://cait.rutgers.edu/njltap)



*The 16th Annual NJDOT Research Showcase is moderated by the New Jersey Local Technical Assistance Program (NJ LTAP), and is sponsored by the NJDOT Bureau of Research and the Federal Highway Administration.*